45. The T cell of claim **44**, wherein:

(i) the T cell has increased T cell priming ability relative to a T cell comprising the first nucleic acid sequence and second nucleic acid sequence, but not the third nucleic acid sequence,

(ii) the third nucleic acid sequence comprises an RNA,

(iii) the third nucleic acid sequence comprises an RNA, wherein the T cell is transfected to transiently express the third RNA,

(iv) the third nucleic acid sequence comprises an RNA, wherein the cell does not comprise an exogenous DNA encoding the third RNA, or

(v) the CAR comprises one or more costimulatory signaling domains, and wherein the third nucleic acid sequence comprises DNA.

46.-**49**. (canceled)

50. The T cell of claim **44**, wherein the T cell further comprises one or more additional distinct nucleic acid sequences encoding a polypeptide which enhances T cell priming, or a functional fragment or variant thereof, which differ from the polypeptides encoded by the second and third nucleic acid sequences.

51. The T cell of claim **50**, wherein:

(i) the one or more additional nucleic acid sequences comprises RNA, or

(ii) the CAR comprises one or more costimulatory signaling domains, and the one or more additional nucleic acids comprise DNA.

52.-**55**. (canceled)

56. The T cell of claim **50**, wherein the first, second, and/or additional nucleic acid sequences are transcribed from an in vitro transcription vector.

57. The T cell of claim **1**, made by introducing a nucleic acid wherein:

(a) the nucleic acid comprises a first nucleic acid sequence encoding a chimeric antigen receptor (CAR) comprising an extracellular domain, a transmembrane domain, and an intracellular signaling domain, and

(b) the nucleic acid comprises a second nucleic acid sequence encoding a polypeptide which enhances T cell priming, or a functional fragment or variant thereof;

provided that

(i) the first and/or second nucleic acid sequence comprises an RNA;

or

(ii) the CAR further comprises a second intracellular signaling domain.

58. A composition comprising the T cell of claim **1**.

59. The composition of claim **58**, further comprising a second therapeutic agent.

60. A method of generating a T cell having enhanced anti-tumor activity, the method comprising introducing a nucleic acid, wherein:

(a) the nucleic acid comprises a first nucleic acid sequence encoding a chimeric antigen receptor (CAR) comprising an extracellular domain, a transmembrane domain, and an intracellular signaling domain, and

(b) the nucleic acid comprises a second nucleic acid sequence encoding a polypeptide which enhances T cell priming, or a functional fragment or variant thereof;

provided that

(i) the first and/or second nucleic acid sequence comprises an RNA;

or

(ii) the CAR further comprises a second intracellular signaling domain.

61. A method of providing anti-tumor immunity in a subject comprising administering to the subject an effective amount of a T cell of claim **1**.

62. A method of treating a subject having a disease associated with the expression of a disease-associated antigen, comprising administering to the subject an effective amount of the T cell of claim **1**.

63. The method of claim **62**, wherein the disease is selected from the group consisting of a proliferative disease, a precancerous condition, a non-cancer related indication, a viral infection, and a bacterial infection.

64. A method of enhancing epitope spreading in a subject with cancer comprising administering to the subject the T cell of claim **1**.

65. A method of vaccinating a subject comprising administering to the subject the T cell of claim **1**.

66. The method of claim **65**, further comprising administering to the subject an antigen, wherein the antigen is a tumor antigen, a viral antigen, or a bacterial antigen.

67.-**68**. (canceled)

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